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Human Milk in the Second Year and Beyond

Virginia Thorley

Visual images of babies breastfeeding are overwhelmingly of young babies, such as newborns and those under three or four months. To some extent the images are a reflection of the culture in which we live, and they in turn serve to reinforce societal attitudes that breastfeeding by a young infant is acceptable, but that it might embarrass the public to encounter an older, more active infant at the breast. Outside of La Leche League and other breastfeeding-friendly settings, the image of a child of a year or more breastfeeding regrettably has the potential to shock. Avoiding embarrassment to an adult is given weight over the needs of the infant, and accepted with little questioning about whose problem this expected embarrassment is. The challenge is how to normalize the breastfeeding of older infants in the public perception. The World Health Organization and UNICEF recommend continuing breastfeeding, after the introduction of appropriate complementary foods, for two years or more.[1],[2] They did not suggest that this be done in the closet and this recommendation remains current and has never been superseded.

Part of the reluctance to show an older baby or toddler at breast is the common use of images of breastfeeding which show a completely bare breast and upper body. While these images have a positive role for promoting skin-to-skin contact, it is not something young mothers may relate to as regards how they react in the reality of their own lives after they are out and about. There is a need to include images where babies of all ages are being breastfed by mothers in ordinary day clothes, something that mothers can see as doable for them, something they can visualize themselves doing. In Western societies where the female breast has been sexualised, an image of an older child at a bare breast may be misconstrued as obscene, or worse. Images that are less confronting may be a way of educating the community without a backlash.

This is not the only reason why breastfeeding a baby of 6-24 months is not encouraged in the community. Years ago there was an old wives' tale told to breastfeeding mothers as their babies reached the second half of the first year – that their milk would 'turn to water' at a particular age, usually the baby's current age. This assertion was both illogical and unscientific. Milk is still milk, even if it changes throughout lactation. Today, although the old wives' tale in its extreme form seems to have disappeared, mothers and health professionals still wonder if the milk is nutritious enough for breastfeeding to be worthwhile in the second year. Yet, even today, the information to answer this question is still limited.

It is true that there is a decline in some nutrients, but for some of them this has begun in the early weeks or months. It is well known that this dynamic food changes as lactation progresses, including the change from preterm colostrum and milk, the change from colostrum through transitional milk to mature milk, and changes during weaning at whatever age. This happens without being subject to human error, as it happens naturally. Surely we can trust the breasts to continue to produce suitable milk for the particular stage of lactation?

Studies of the nutrients in human milk in the second year are few and most are old, with limited numbers, outdated collection methods, or conducted in resource-poor environments where mothers and children are commonly malnourished.[3] Nevertheless, Onyango and colleagues reported that breast milk contributed a typical 328 kcal/day or 32% of energy intake to toddler diets in a resource-poor area of western Kenya.[4] This is an important contribution in a poor area. Complementary foods were of inadequate quality and even if breastfeeding continued, the children's growth was suboptimal. However, it was significantly worse in children whose breastfeeding was replaced by an increased intake of complementary foods.

Kathleen Dewey has provided useful information about the significant nutrition provided by a mother's milk, even when her child is eating other foods in addition to breastfeeding. This is particularly the case for protein, fat and most vitamins into the toddler period. [5] Minerals such as iron, zinc and calcium need to be provided through complementary foods (formerly known as 'solids'), though the bioavailability of zinc in human milk is high. Dewey calculated that 448 ml of breast milk per day provides the child of 12-23 months with significant nutrition. She presented the percentages as those required from complementary foods. The following list is a recalculation of this information as the percentage provided by human milk in this model. Keeping in mind that some of these values are approximations because the recommended nutrient intakes are uncertain, the percentages of the recommended daily intake of some of the important components are:

- Energy: 313 kcal/d (29%)
- Protein: 4.7 g/d (43%)
- Vitamin A: 300 μg RE/d (75%)
- Folate: 38 μg/d (76%)
- Vitamin C: 18 mg/d (60%).[5]

These percentages are for a child receiving a substantial amount of human milk. Obviously, for a child receiving less of her mother's milk, the percentages will be less, but still important.

It is difficult to measure and compare concentrations of some ingredients in what is a dynamic fluid. Fats, an important component in human milk for the toddler, are a case in point as they change during a feed, diurnally (during a 24-hour period) and between individuals.[6] . Recent research by Mandel et al has shown that the milk of mothers who were breastfeeding beyond a year had significantly increased fat and energy content compared with mothers feeding infants between 2 to 6 months of age.[7] It appears that lactose and total carbohydrates remain stable throughout lactation. However there appears to be a decline in concentration of a number of components of human milk such as sIgA and oligosaccharides, though for some of these the decline occurs early, rather than later. Changes in mineral and vitamin concentrations have been attributed to changes in the mammary gland during the weaning process.[8] Even so, human milk continues to provide significant nutrition and infection protection for the toddler.

Oligosaccharides are the third most prevalent component in human milk. They decline by the end of the first year, with the proportions of different oligosaccharides also changing.[3] Considering the sheer quantities of this important prebiotic early in lactation, what remains in the second year is still substantial and far superior to anything offered by alternative feeding methods. The oligosaccharides in products marketed as 'toddler milks' are much less diverse and they are not the ones found in human milk. Replacing breastfeeding with a 'toddler milk' inevitably reduces the child's intake of this important prebiotic.

The information presented here is reassuring for mothers and their advisers who are concerned about 'picky eaters'. Mercifully for the breastfed child, meals at the breast provide a good deal of quality nourishment, supplemented by meals of complementary foods.

Research has shown that breast milk is still an important part of toddler diets. However there is a great need for new, well-designed studies of the milk composition of well-nourished mothers during their infant's second year, in countries such as New Zealand and Australia. As the weaning process skews changes in milk composition - for instance, an increase in protein after an earlier decline[3,9] - such a study should compare milk content between mothers whose babies are weaning and mothers continuing to produce significant amounts of milk.

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Biography

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Virginia Thorley is one of the pioneers of the breastfeeding movement in Australia. Her interest began when, living in a remote area, she sought personal breastfeeding help from **La Leche League** by letter. She has subsequently filled a number of roles for the **Australian Breastfeeding Association**. **Dr Thorley** has published widely in refereed journals, as well as books for mothers (now out of print). She was in the first cohort to certify IBCLC in 1985, and is a Medical Historian with two research higher degrees. In 2008 she was inducted as a Fellow of **International Lactation Consultant Association** (FILCA).